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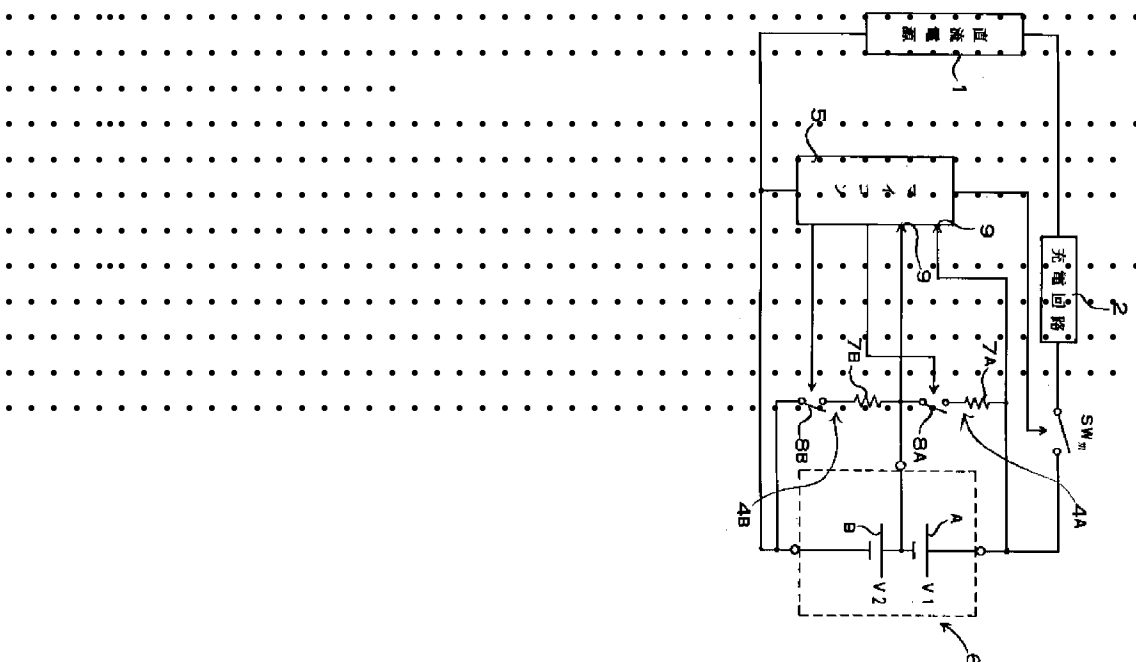
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(54)【発明の名称】 電池の充電方法

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A dot grid paper template with a 20x20 grid of dots. The grid is divided into four quadrants by a vertical line and a horizontal line. The top-left quadrant is labeled '10' and the bottom-right quadrant is labeled '20'. The top-right quadrant is labeled '30' and the bottom-left quadrant is labeled '40'. The grid is used for writing and drawing.

1 2 3 4 5

6 7 8 9 10

11 12 13 14 15

16 17 18 19 20

21 22 23 24 25

26 27 28 29 30

31 32 33 34 35

36 37 38 39 40

41 42 43 44 45

46 47 48 49 50

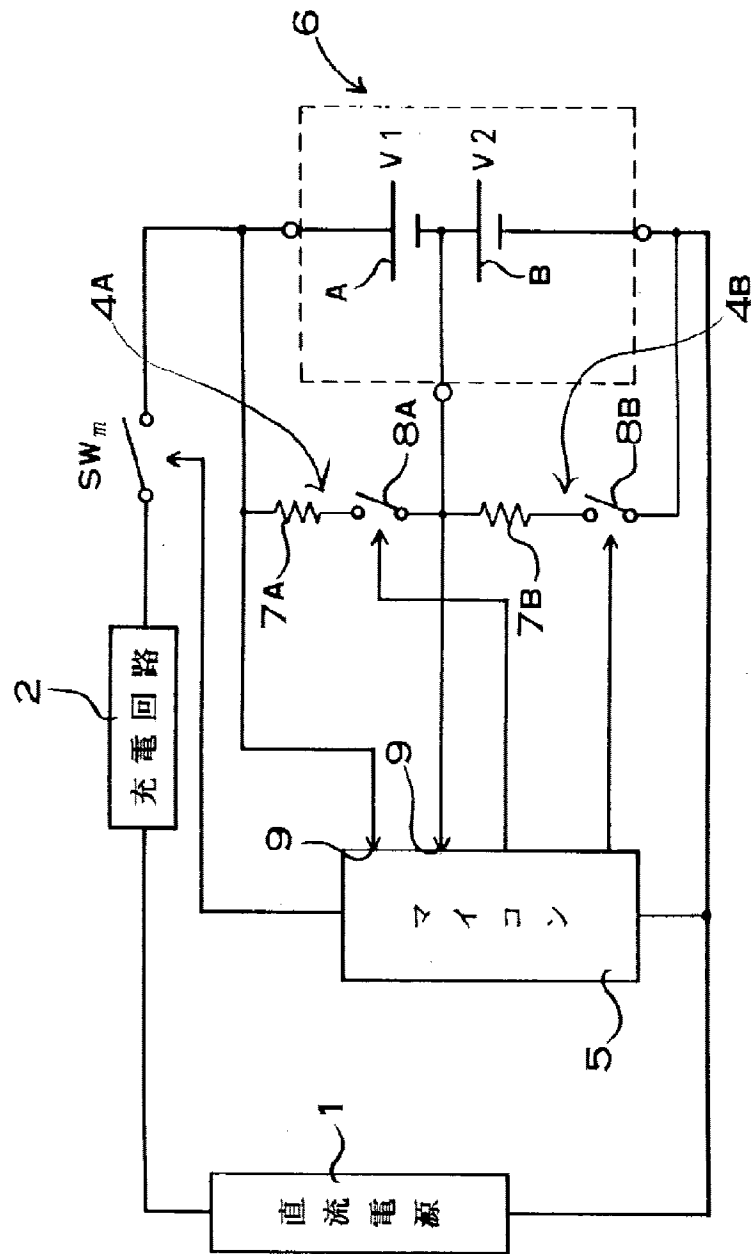
10

20

30

40

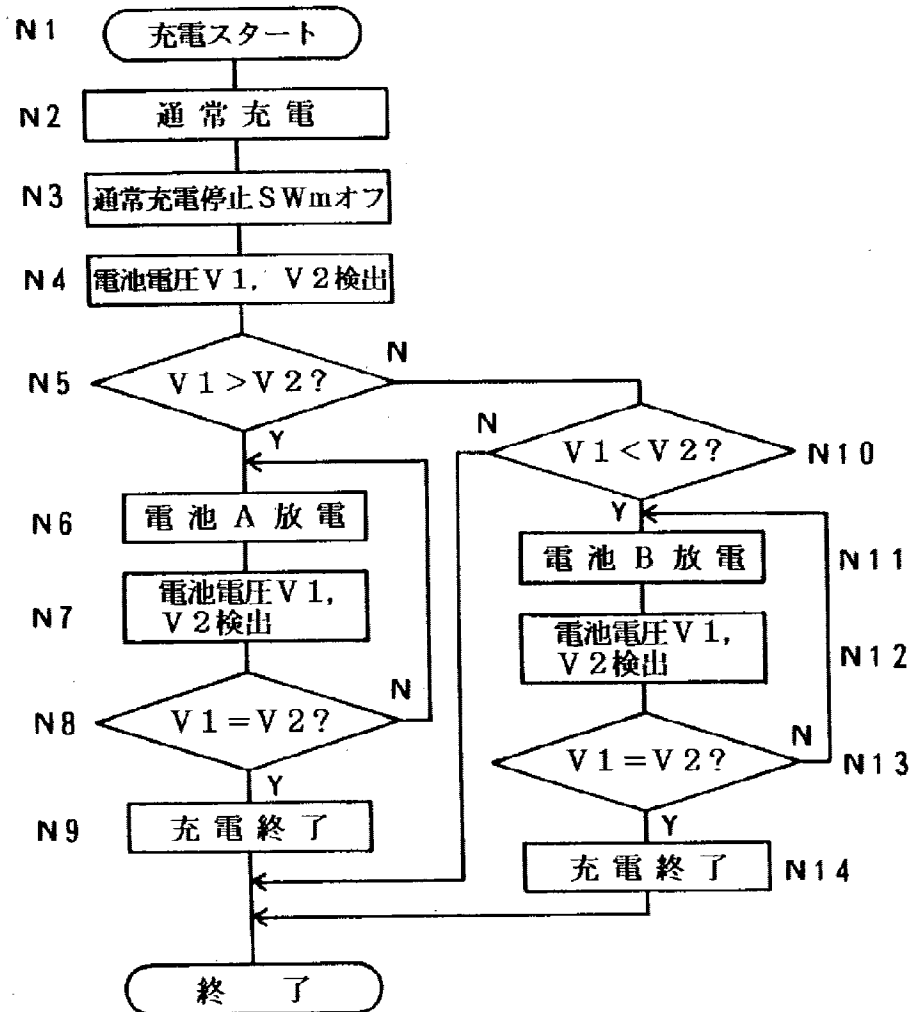
A 40x40 grid of dots. The dots are arranged in a regular pattern. The labels 10, 20, 30, and 40 are placed at regular intervals along the horizontal axis, specifically at the 10th, 20th, 30th, and 40th columns from the left. The label 10 is at the 10th column, 20 is at the 20th column, 30 is at the 30th column, and 40 is at the 40th column. The labels are placed at the same vertical position, which is the 10th row from the top.



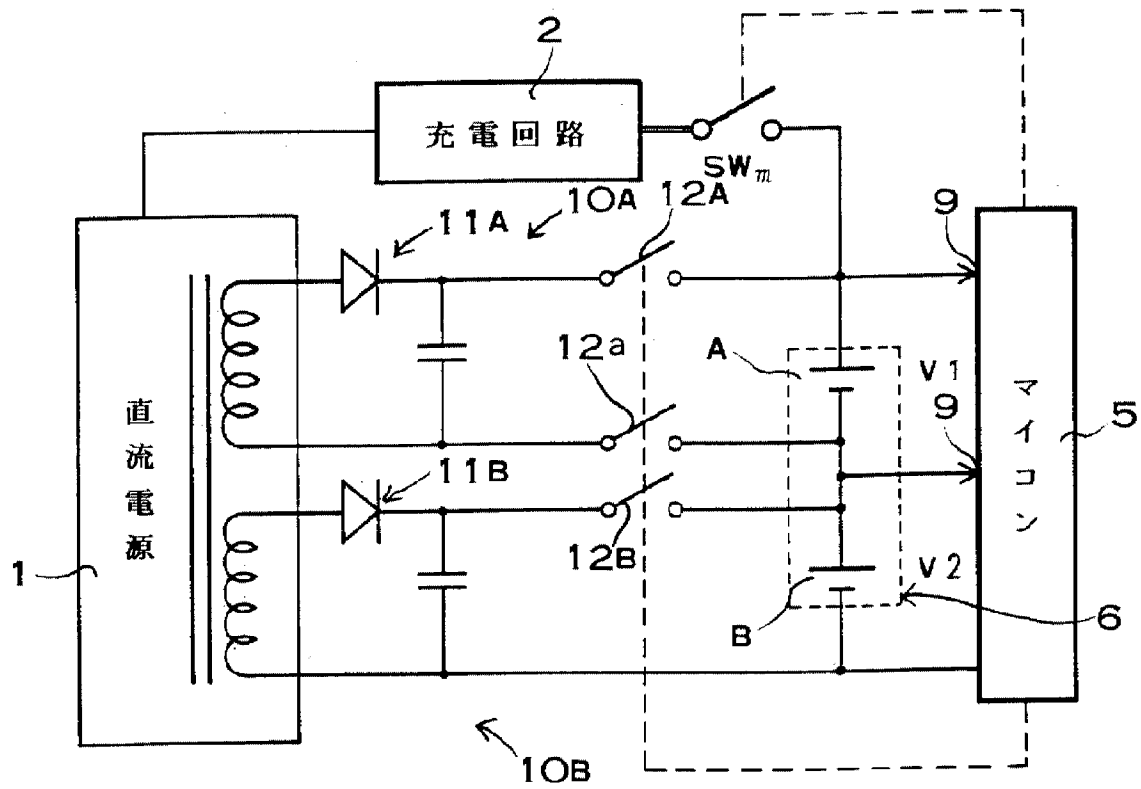
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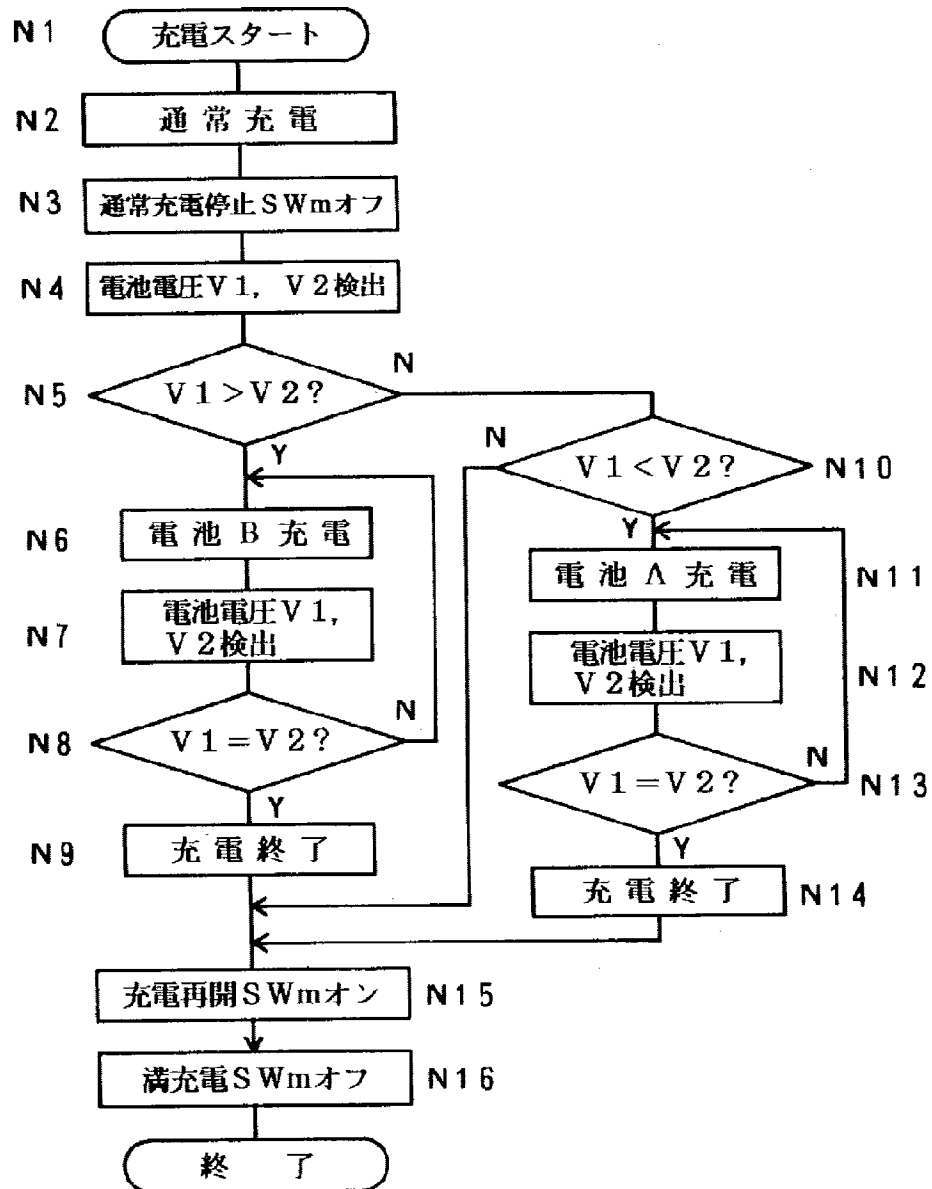
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PATENT ABSTRACTS OF JAPAN

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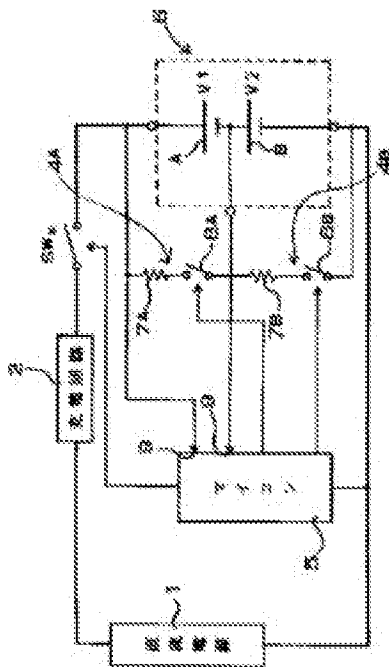
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(21)Application number : **05-036702** (71)Applicant : **SANYO ELECTRIC CO LTD**

(22)Date of filing : **25.02.1993** (72)Inventor : **TAMAI MIKITAKA**

(54) CHARGING METHOD FOR BATTERY



(57)Abstract:

PURPOSE: To prevent the deterioration in batteries when a plurality of batteries are connected in series and charged, by providing uniform voltages in a balanced charging and discharging way, in which a low-voltage battery is charged, while a high-voltage battery is discharged to diminish the difference between battery voltages.

CONSTITUTION: A battery pack 6 made up of a plurality of batteries connected in series is charged by a DC power supply 1 through a charging circuit 2. When a microcomputer 6 detects a fully charged state, a switch SW_m is opened. The microcomputer 5 monitors the

voltage of each battery (A) or (B), and when a voltage of the battery (A) or (B) is over a given level, a switch 8A or 8B is turned off to discharge the battery (A) or (B) through a resistor 7A or 7B. In this case, the overvoltage battery (A) or (B) may be stopped from charging for a while and the lower-voltage battery may be only charged. Then, each battery in the battery pack 6 has a uniform voltage charged or discharged in a balanced way, and this balanced charging is preferably carried out before a fully charged state. Consequently, a cyclic life is increased so that the battery has a longer life.